
	<p style="text-align: center;">USACE CIM Civil Information Modeling <i>AutoCAD Civil 3D</i></p>
	<p style="text-align: center;">US Army Corps of Engineers</p>

Civil Information Modeling (CIM) is the process of using data rich objects for design of not only buildings but civil structures and site components as well. Using the capability of modeling processes, channels, floodwalls or levees can be designed, engineered and analyzed and integrated into real world or proposed site topography. Site information may come from Laser point clouds, survey, imagery, GIS or hydrographic files. This information must be integrated as part of the design data to allow editing and reporting with the CIM objects.

Many levee systems need to be re-analyzed and renovated to respond to new engineering standards, and specifications driven by new weather and storm trends and flood zone criteria. Defining and specifying the scope of these projects for solicitation and bidding can be a challenge. A fully digital, Civil Information Modeling (CIM) approach to project design and construction can save project schedule and cost and improve overall deliverable quality and spur innovation.

The CAD/BIM Technology Center has worked with Autodesk Consulting to create a self-paced, online training class in Civil Information Modeling to assist USACE Civil Works designers with their understanding and use of the Autodesk Civil 3D software. This is an intermediate level course and does not cover the basic Civil 3D software environment or interfaces that are necessary for completing the CIM exercises. At least a basic level course should be taken as a prerequisite for these exercises.

The tutorials and information provided for this project cover the use of Autodesk Civil3D 2013 CIM software for designing channels, levees and floodwalls. This tutorial can adapted for 2014 versions of the software as well. There are 5 courses in this series that consist of PDF instructional training documents, base AutoCAD .DWG type files, LandXML files and imagery.

More information on these tutorials is covered in the “**USACE CIM Civil Information Modeling Overview**” overview document.

Each training course contains an instruction manual covering the step by step process for using the software on a specific civil works type of project (floodwall, levee, channel). There is also an AutoCAD Civil 3D Template file set up with certain styles that are necessary for the correct display of the civil Objects. Each course also contains required training data such as DWG files, image files, LandXML files and text files.

Each class manual walks the students step by step through the process and demonstrates use of the tools for the specific civil works processes covered in the class. A set of instructional videos for the exercises are also available to assist and train the user. There are multiple videos for each course.

Download Package:

List of Files included in Package			
Document	Doc. Type	File Name	Description
Training Manuals	.PDF	USACE 1.0 Channel Fundamentals Course.PDF,...	Set of 5 Manuals containing written instructions for the class.
USACE Base Template	.DWT	USACE_C3D_Training.dwt	This template is required for the classes and contains Object styles composed for the classes.
Glossary	.PDF	Civil_3D_Glossary.pdf	Definitions of general terms that will be encountered in the software and the exercises.
Video	.WMV	1.0 Channel Fundamentals_1of3.wmv	Video Training files to assist user with tutorials.
Support Files:	.ZIP	USACE_C3D_Training	Contains the following files:
Linetypes	.LIN	Tsaec8.lin	See Appendix "A"
Linetypes	.LIN	Tsaec32.lin	See Appendix "A"
Shape file	.SHX	Tsaec8.shx	See Appendix "A"
Instructions	.PDF	InstallInstructions.pdf	See Appendix "A"

Appendix "A"

Instructions:

AutoCAD Linestyle Installation Instructions

1. Unzip the file acad_lines_AECR5.zip into a temporary directory. There will be five files found in the acad_lines_AECR5.zip file.

*****NOTE:*****

You can choose which line style you want to load based on the text height in the line style.

- Tsaec8.lin - Contains the A/E/C CAD Standard ACAD line styles with **1/8"** text height.
- Tsaec32.lin - Contains the A/E/C CAD Standard ACAD line styles with **3/32"** text height.
- Tsaec.shx - Contains the shapes necessary for the line styles to appear correctly.
- Tsaec_MLN.shx - Contains the shapes necessary for the line styles to appear correctly.

2. Copy the following files into the ..\Support\ folder under the AutoCAD root folder.

The files to copy are:

- Tsaec8.lin
- Tsaec32.lin
- Tsaec.shx
- Tsaec_MLN.shx